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Transport Planning, Traffic Impact Assessments, Road Safety Audits, Expert Witness

17 April 2025 Reference: 240047.08DA

Revelop
PO Box 313
Baulkham Hills NSW 1755
Attention: Anthony El-Hazouri

SUPPLEMENTARY TRAFFIC ADVICE
MODIFICATIONS TO FORESTWAY SHOPPING CENTRE
AT FOREST WAY, FRENCHS FOREST

Dear Anthony,

Reference is made to your request to provide supplementary traffic advice for the proposed Modifications to Forestway Shopping Centre at Forest Way, Frenchs Forest. This letter is in response to the matters discussed at the meeting between TfNSW, Northern Beaches Council and representatives of Revelop on Tuesday 15 April 2025. This advice should be read as a supplement to the letter prepared by M^CLaren Traffic Engineering dated 11 April 2025.

Noting the revised traffic generation and traffic distribution for the site if there is no right turn out of the site (as outlined in the 11 April 2025 letter), the SIDRA model has been revised to reflect these assumptions and to remove the pedestrian bridge (restoring the at-grade pedestrian crossing of Forest Way as part of the new signals).

For reference, revised movement summary reports are provided in **Annexure A** and the SIDRA file will be provided to TfNSW with this letter.

In the meeting it was discussed that the additional width of Forest Way due to the additional lane may result in increased walk times and, as a result, longer queue distances to the south. To ensure this is correctly reflected in the model, the walk distances in SIDRA have been increased from 18m (existing) to 22m. The existing and future queue lengths based on the removal of the pedestrian bridge and no right turn out of the site are summarised in **Table 1**.

TABLE 1: QUEUE LENGTH OUTPUTS

Peak Hour	Existing Northbound Queue Length from Pedestrian Signals (95th Percentile)	Proposed Northbound Queue Length from New Signals (95th Percentile)
Weekday AM	88.8m	52.7m
Weekday PM	81.6m	77m
Weekend	101.9m	57m

As shown, the queues are expected to decrease rather than increase based on the results of the model. Considering this, without the right turn movement out of the site, there is no need for the pedestrian bridge to be provided.

Please contact the undersigned on 9521 7199 should you require further information or assistance.

Yours faithfully,
McLaren Traffic Engineering

Tom Steal
Associate
BE Civil MIEAust
TfNSW Accredited Level 3 Road Safety Auditor

ANNEXURE A: MOVEMENT SUMMARY REPORTS

(12 SHEETS)

MOVEMENT SUMMARY

Site: 103 [Naree Rd / Forest Way (Site Folder: FU AM - 2036 + Dev + No Ped Overpass + Passing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [AM (Network Folder: 2036 Plus Development)]

Naree Road / Forest Way
2036 AM Peak + Dev Growth
New FW Signals
Site Category: 2036 + Development Traffic + 28% Passing Trade
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 130 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Forest Way (S)															
2	T1	All MCs	1445	10.0	1445	10.0	0.405	8.7	LOS A	12.9	98.2	0.45	0.40	0.45	49.3
3	R2	All MCs	202	8.1	202	8.1	* 0.786	50.9	LOS D	12.0	89.6	0.95	0.83	0.99	23.1
Approach			1647	9.8	1647	9.8	0.786	13.9	LOS A	12.9	98.2	0.51	0.45	0.51	41.2
East: Naree Road (E)															
4	L2	All MCs	203	0.5	203	0.5	0.343	29.6	LOS C	7.8	54.9	0.65	0.73	0.65	27.8
6	R2	All MCs	260	4.3	260	4.3	* 0.787	60.9	LOS E	16.4	118.7	1.00	0.88	1.08	25.1
Approach			463	2.7	463	2.7	0.787	47.2	LOS D	16.4	118.7	0.85	0.81	0.89	26.0
North: Forest Way (N)															
7	L2	All MCs	146	5.6	146	5.6	0.786	13.0	LOS A	28.2	208.9	0.74	0.71	0.74	39.2
8	T1	All MCs	1839	7.4	1839	7.4	* 0.786	18.0	LOS B	28.2	208.9	0.73	0.67	0.73	33.9
Approach			1985	7.2	1985	7.2	0.786	17.7	LOS B	28.2	208.9	0.73	0.67	0.73	34.7
All Vehicles			4095	7.7	4095	7.7	0.787	19.5	LOS B	28.2	208.9	0.65	0.60	0.66	34.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

MOVEMENT SUMMARY

Site: 101 [Warringah Road/Forest Way (Site Folder: FU AM - 2036 + Dev + No Ped Overpass + Passing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [AM (Network Folder: 2036 Plus Development)]

Warringah Road/Forest Way
2036 AM Peak + Dev Growth
New FW Signals
Site Category: 2036 + Development Traffic + 28% Passing Trade
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 130 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Warringah Road (E)															
5	T1	All MCs	515	3.2	515	3.2	0.531	25.0	LOS B	21.6	155.7	0.73	0.65	0.73	48.9
6	R2	All MCs	968	9.6	968	9.6	* 0.915	78.5	LOS F	24.4	184.9	1.00	1.01	1.28	18.1
Approach			1483	7.4	1483	7.4	0.915	59.9	LOS E	24.4	184.9	0.90	0.88	1.09	26.6
North: Forest Way (N)															
7	L2	All MCs	1070	9.6	1069	9.6	0.469	42.2	LOS C	15.6	117.9	0.24	0.89	0.24	41.1
9	R2	All MCs	1007	11.0	1006	11.0	* 0.524	72.2	LOS F	29.5	219.8	0.99	0.81	0.99	25.6
Approach			2077	10.3	2075	10.3	0.524	56.8	LOS E	29.5	219.8	0.60	0.85	0.60	25.5
West: Warringah Road (S)															
10	L2	All MCs	697	11.6	697	11.6	0.319	16.6	LOS B	9.3	71.5	0.46	0.72	0.46	43.4
11	T1	All MCs	958	4.1	958	4.1	* 0.898	61.4	LOS E	33.8	245.4	1.00	1.04	1.18	32.4
Approach			1655	7.3	1655	7.3	0.898	42.5	LOS D	33.8	245.4	0.77	0.90	0.88	34.8
All Vehicles			5214	8.5	5213	8.5	0.915	53.1	LOS D	33.8	245.4	0.74	0.88	0.83	28.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

MOVEMENT SUMMARY

Site: 101 [Russell Ave / Forest Way (Site Folder: FU AM - 2036 + Dev + No Ped Overpass + Passing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [AM (Network Folder: 2036 Plus Development)]

Russell Avenue / Forest Way
2036 AM Peak + Dev Growth
New FW Signals
Site Category: 2036 + Development Traffic + 28% Passing Trade
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Forest Way (S)															
1	L2	All MCs	122	1.7	122	1.7	0.340	6.2	LOS A	0.0	0.0	0.00	0.14	0.00	34.7
2	T1	All MCs	1397	11.5	1397	11.5	0.340	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	65.1
Approach			1519	10.7	1519	10.7	0.340	0.5	NA	0.0	0.0	0.00	0.05	0.00	59.8
North: Forest Way (N)															
8	T1	All MCs	1945	7.1	1945	7.1	0.558	1.5	LOS A	4.9	36.4	0.10	0.09	0.10	53.6
9	R2	All MCs	89	1.2	89	1.2	0.844	74.5	LOS F	3.2	22.4	0.98	1.17	1.87	5.9
Approach			2035	6.9	2035	6.9	0.844	4.7	NA	4.9	36.4	0.14	0.13	0.18	35.9
West: Russell Avenue (W)															
10	L2	All MCs	201	2.1	201	2.1	0.272	5.9	LOS A	1.0	7.2	0.51	0.69	0.53	19.2
12	R2	All MCs	6	0.0	6	0.0	1.299	460.0	LOS F	2.4	16.8	1.00	1.12	1.56	0.4
Approach			207	2.0	207	2.0	1.299	19.7	LOS B	2.4	16.8	0.52	0.70	0.56	7.8
All Vehicles			3761	8.2	3761	8.2	1.299	3.9	NA	4.9	36.4	0.10	0.13	0.13	39.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101v [Forest Way Entry to Centre (Site Folder: FU AM - 2036 + Dev + No Ped Overpass + Passing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [AM (Network Folder: 2036 Plus Development)]

Forest Way Entry to Centre
2036 AM Peak + Dev Growth
New FW Signals
Site Category: 2036 + Development Traffic + 28% Passing Trade
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 130 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Forest Way (S)															
1	L2	All MCs	151	0.0	151	0.0	0.418	10.0	LOS A	5.3	39.7	0.17	0.36	0.17	28.0
2	T1	All MCs	1456	11.2	1456	11.2	0.418	2.4	LOS A	6.9	52.7	0.19	0.23	0.19	51.6
Approach			1606	10.2	1606	10.2	0.418	3.1	LOS A	6.9	52.7	0.19	0.24	0.19	41.4
North: Forest Way (N)															
8	T1	All MCs	1858	7.5	1856	7.5	* 0.638	10.3	LOS A	24.1	179.5	0.59	0.49	0.59	27.2
9	R2	All MCs	95	0.0	95	0.0	* 0.308	55.2	LOS D	5.2	36.3	0.89	0.77	0.89	23.8
Approach			1953	7.1	1951	7.1	0.638	12.5	LOS A	24.1	179.5	0.60	0.51	0.60	26.4
West: Centre Entry (W)															
10	L2	All MCs	38	0.0	38	0.0	0.060	54.3	LOS D	1.0	7.1	0.87	0.70	0.87	21.8
Approach			38	0.0	38	0.0	0.060	54.3	LOS D	1.0	7.1	0.87	0.70	0.87	21.8
All Vehicles			3597	8.4	3595	8.4	0.638	8.7	LOS A	24.1	179.5	0.42	0.39	0.42	32.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

MOVEMENT SUMMARY

Site: 103 [Naree Rd / Forest Way (Site Folder: PM - Dec 2024 + Dev + No Ped Overpass + Passing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [PM (Network Folder: 2036 Plus Development)]

Naree Road / Forest Way
2036 PM Peak + Dev Growth
New FW Signals
Site Category: 2036 + Development Traffic + 28% Passing Trade
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 130 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Forest Way (S)															
2	T1	All MCs	2069	3.0	2069	3.0	0.550	2.7	LOS A	11.4	82.0	0.21	0.19	0.21	62.0
3	R2	All MCs	254	8.2	254	8.2	* 0.682	58.7	LOS E	15.3	114.7	0.99	0.85	1.00	21.3
Approach			2323	3.6	2323	3.6	0.682	8.8	LOS A	15.3	114.7	0.29	0.26	0.29	47.9
East: Naree Road (E)															
4	L2	All MCs	138	1.0	138	1.0	0.193	21.2	LOS B	4.0	27.9	0.49	0.67	0.49	31.9
6	R2	All MCs	307	3.0	307	3.0	0.884	66.0	LOS E	20.7	148.8	1.00	0.96	1.18	24.1
Approach			445	2.4	445	2.4	0.884	52.1	LOS D	20.7	148.8	0.84	0.87	0.96	25.5
North: Forest Way (N)															
7	L2	All MCs	208	3.1	208	3.1	* 0.900	25.5	LOS B	37.8	271.6	0.89	0.89	0.99	32.8
8	T1	All MCs	1763	3.1	1763	3.1	0.900	28.8	LOS C	37.8	271.6	0.88	0.86	0.96	26.1
Approach			1971	3.1	1971	3.1	0.900	28.4	LOS B	37.8	271.6	0.88	0.86	0.96	27.4
All Vehicles			4739	3.3	4739	3.3	0.900	21.0	LOS B	37.8	271.6	0.59	0.57	0.64	34.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

MOVEMENT SUMMARY

Site: 101 [Warringah Road/Forest Way (Site Folder: PM - Dec 2024 + Dev + No Ped Overpass + Passing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [PM (Network Folder: 2036 Plus Development)]

Warringah Road/Forest Way
2036 PM Peak + Dev Growth
New FW Signals
Site Category: 2036 + Development Traffic + 28% Passing Trade
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 130 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Warringah Road (E)															
5	T1	All MCs	264	6.3	264	6.3	0.215	10.0	LOS A	6.4	47.5	0.42	0.36	0.42	59.7
6	R2	All MCs	1409	1.8	1409	1.8	* 0.856	63.4	LOS E	30.6	217.7	1.00	0.94	1.11	21.1
Approach			1673	2.5	1673	2.5	0.856	54.9	LOS D	30.6	217.7	0.91	0.85	1.00	25.5
North: Forest Way (N)															
7	L2	All MCs	1080	2.7	1080	2.7	0.497	31.1	LOS C	9.3	66.9	0.14	1.02	0.14	45.9
9	R2	All MCs	712	5.6	712	5.6	* 0.705	82.8	LOS F	21.4	154.6	1.00	0.86	1.00	23.8
Approach			1792	3.9	1792	3.9	0.705	51.6	LOS D	21.4	154.6	0.48	0.95	0.48	27.2
West: Warringah Road (S)															
10	L2	All MCs	1005	8.1	1005	8.1	0.521	26.7	LOS B	18.7	140.4	0.64	0.79	0.64	37.3
11	T1	All MCs	1228	3.3	1228	3.3	* 0.874	53.4	LOS D	39.9	287.1	1.00	0.98	1.10	35.9
Approach			2233	5.5	2233	5.5	0.874	41.4	LOS C	39.9	287.1	0.84	0.90	0.90	35.0
All Vehicles			5698	4.1	5698	4.1	0.874	48.6	LOS D	39.9	287.1	0.75	0.90	0.80	29.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

MOVEMENT SUMMARY

Site: 101 [Russell Ave / Forest Way (Site Folder: PM - Dec 2024 + Dev + No Ped Overpass + Passing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [PM (Network Folder: 2036 Plus Development)]

Russell Avenue / Forest Way
2036 PM Peak + Dev Growth
New FW Signals
Site Category: 2036 + Development Traffic + 28% Passing Trade
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Forest Way (S)															
1	L2	All MCs	193	0.5	193	0.5	0.442	6.2	LOS A	0.0	0.0	0.00	0.15	0.00	34.8
2	T1	All MCs	1978	3.3	1978	3.3	0.442	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	64.8
Approach			2171	3.1	2171	3.1	0.442	0.6	NA	0.0	0.0	0.00	0.06	0.00	59.1
North: Forest Way (N)															
8	T1	All MCs	1647	2.6	1647	2.6	0.384	0.9	LOS A	2.8	19.7	0.10	0.10	0.11	59.3
9	R2	All MCs	204	1.0	204	1.0	0.851	39.9	LOS C	4.9	34.3	0.96	1.21	1.90	10.0
Approach			1852	2.4	1852	2.4	0.851	5.2	NA	4.9	34.3	0.20	0.22	0.31	34.2
West: Russell Avenue (W)															
10	L2	All MCs	277	0.8	277	0.8	0.673	24.8	LOS B	6.0	42.4	0.87	1.28	1.83	6.4
12	R2	All MCs	64	0.0	64	0.0	0.520	55.1	LOS D	2.3	16.2	0.94	1.08	1.32	3.1
Approach			341	0.6	341	0.6	0.673	30.5	LOS C	6.0	42.4	0.88	1.25	1.73	5.3
All Vehicles			4363	2.6	4363	2.6	0.851	4.9	NA	6.0	42.4	0.15	0.22	0.27	35.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101v [Forest Way Entry to Centre (Site Folder: PM - Dec 2024 + Dev + No Ped Overpass + Passing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [PM (Network Folder: 2036 Plus Development)]

Forest Way Entry to Centre
2036 PM Peak + Dev Growth
New FW Signals
Site Category: 2036 + Development Traffic + 28% Passing Trade
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 130 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Forest Way (S)															
1	L2	All MCs	266	0.0	266	0.0	0.580	7.6	LOS A	8.7	62.0	0.20	0.35	0.20	32.3
2	T1	All MCs	2068	3.2	2068	3.2	* 0.580	2.1	LOS A	10.7	76.6	0.20	0.22	0.20	47.8
Approach			2335	2.8	2335	2.8	0.580	2.7	LOS A	10.7	76.6	0.20	0.24	0.20	41.1
North: Forest Way (N)															
8	T1	All MCs	1624	2.7	1624	2.7	0.424	1.7	LOS A	7.3	52.4	0.13	0.12	0.13	48.8
9	R2	All MCs	67	0.0	67	0.0	* 0.201	63.4	LOS E	4.2	29.4	1.00	0.79	1.00	17.3
Approach			1692	2.6	1692	2.6	0.424	4.2	LOS A	7.3	52.4	0.17	0.15	0.17	37.2
West: Centre Entry (W)															
10	L2	All MCs	65	0.0	65	0.0	0.095	49.3	LOS D	1.7	12.0	0.86	0.69	0.86	16.7
Approach			65	0.0	65	0.0	0.095	49.3	LOS D	1.7	12.0	0.86	0.69	0.86	16.7
All Vehicles			4092	2.7	4092	2.7	0.580	4.1	LOS A	10.7	76.6	0.20	0.21	0.20	37.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

MOVEMENT SUMMARY

Site: 103 [Naree Rd / Forest Way - Copy (2) (Site Folder: WE - Dec 2024 + Dev + No Ped Overpass + Passing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [WE (Network Folder: 2036 Plus Development)]

Naree Road / Forest Way
2036 PM Peak + Dev Growth
New FW Signals
Site Category: 2036 + Development Traffic + 28% Passing Trade
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 130 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Forest Way (S)															
2	T1	All MCs	1799	3.1	1799	3.1	0.463	2.3	LOS A	8.2	58.9	0.17	0.16	0.17	63.1
3	R2	All MCs	250	6.3	250	6.3	* 0.707	64.9	LOS E	15.7	115.8	1.00	0.87	1.02	20.1
Approach			2049	3.5	2049	3.5	0.707	9.9	LOS A	15.7	115.8	0.27	0.25	0.28	46.1
East: Naree Road (E)															
4	L2	All MCs	128	0.0	128	0.0	0.196	24.6	LOS B	4.1	28.7	0.54	0.69	0.54	30.1
6	R2	All MCs	263	2.0	263	2.0	0.882	68.3	LOS E	17.8	126.8	1.00	0.96	1.19	23.7
Approach			391	1.3	391	1.3	0.882	54.0	LOS D	17.8	126.8	0.85	0.87	0.98	25.0
North: Forest Way (N)															
7	L2	All MCs	227	3.5	227	3.5	* 0.894	24.1	LOS B	40.4	289.8	0.88	0.88	0.97	33.7
8	T1	All MCs	1932	2.6	1932	2.6	0.894	27.1	LOS B	40.4	289.8	0.87	0.85	0.94	27.0
Approach			2158	2.7	2158	2.7	0.894	26.7	LOS B	40.4	289.8	0.87	0.85	0.94	28.3
All Vehicles			4598	3.0	4598	3.0	0.894	21.6	LOS B	40.4	289.8	0.60	0.58	0.65	33.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

MOVEMENT SUMMARY

Site: 101 [Warringah Road/Forest Way - Copy (2) (Site Folder: WE - Dec 2024 + Dev + No Ped Overpass + Passing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [WE (Network Folder: 2036 Plus Development)]

Warringah Road/Forest Way
2036 PM Peak + Dev Growth
New FW Signals
Site Category: 2036 + Development Traffic + 28% Passing Trade
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 130 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Warringah Road (E)															
5	T1	All MCs	173	2.1	173	2.1	0.135	9.3	LOS A	4.0	28.2	0.40	0.33	0.40	60.3
6	R2	All MCs	1217	2.8	1217	2.8	* 0.764	58.0	LOS E	24.4	175.2	1.00	0.87	1.02	22.4
Approach			1390	2.7	1390	2.7	0.764	52.0	LOS D	24.4	175.2	0.92	0.80	0.95	25.9
North: Forest Way (N)															
7	L2	All MCs	1204	3.4	1204	3.4	0.557	34.9	LOS C	10.5	75.5	0.14	1.07	0.14	45.7
9	R2	All MCs	713	2.7	713	2.7	* 0.714	81.2	LOS F	21.4	152.7	1.00	0.85	1.00	24.1
Approach			1916	3.1	1916	3.1	0.714	52.1	LOS D	21.4	152.7	0.46	0.99	0.46	27.0
West: Warringah Road (S)															
10	L2	All MCs	832	4.0	832	4.0	0.426	21.9	LOS B	14.1	102.4	0.59	0.76	0.59	38.6
11	T1	All MCs	1088	0.9	1088	0.9	* 0.757	40.3	LOS C	30.4	214.1	0.95	0.84	0.95	39.8
Approach			1920	2.2	1920	2.2	0.757	32.3	LOS C	30.4	214.1	0.79	0.81	0.79	39.5
All Vehicles			5226	2.7	5226	2.7	0.764	44.8	LOS D	30.4	214.1	0.71	0.87	0.71	30.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

MOVEMENT SUMMARY

Site: 101 [Russell Ave / Forest Way - Copy (2) (Site Folder: WE - Dec 2024 + Dev + No Ped Overpass + Passing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [WE (Network Folder: 2036 Plus Development)]

Russell Avenue / Forest Way
2036 PM Peak + Dev Growth
New FW Signals
Site Category: 2036 + Development Traffic + 28% Passing Trade
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Forest Way (S)															
1	L2	All MCs	160	3.3	160	3.3	0.389	6.2	LOS A	0.0	0.0	0.00	0.14	0.00	35.0
2	T1	All MCs	1754	3.1	1754	3.1	0.389	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	65.2
Approach			1914	3.1	1914	3.1	0.389	0.5	NA	0.0	0.0	0.00	0.05	0.00	59.8
North: Forest Way (N)															
8	T1	All MCs	1876	2.1	1876	2.1	0.447	0.9	LOS A	2.9	20.8	0.09	0.09	0.10	59.0
9	R2	All MCs	147	0.7	147	0.7	0.781	46.9	LOS D	3.3	23.1	0.97	1.15	1.69	8.8
Approach			2023	2.0	2023	2.0	0.781	4.3	NA	3.3	23.1	0.16	0.17	0.21	37.6
West: Russell Avenue (W)															
10	L2	All MCs	236	1.3	236	1.3	0.329	7.4	LOS A	1.5	10.7	0.58	0.81	0.70	16.5
12	R2	All MCs	79	1.3	79	1.3	0.556	38.6	LOS C	1.6	11.6	0.97	1.06	1.25	4.3
Approach			315	1.3	315	1.3	0.556	15.2	LOS B	1.6	11.6	0.68	0.87	0.83	9.7
All Vehicles			4252	2.5	4252	2.5	0.781	3.4	NA	3.3	23.1	0.13	0.17	0.16	41.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101v [Forest Way Entry to Centre - Copy (2) (Site Folder: WE - Dec 2024 + Dev + No Ped Overpass + Passing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [WE (Network Folder: 2036 Plus Development)]

Forest Way Entry to Centre
2036 PM Peak + Dev Growth
New FW Signals
Site Category: 2036 + Development Traffic + 28% Passing Trade
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 130 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Forest Way (S)															
1	L2	All MCs	241	0.0	241	0.0	0.500	7.5	LOS A	6.4	45.7	0.17	0.33	0.17	32.3
2	T1	All MCs	1767	3.4	1767	3.4	* 0.500	1.9	LOS A	7.9	56.9	0.17	0.20	0.17	48.3
Approach			2008	3.0	2008	3.0	0.500	2.6	LOS A	7.9	56.9	0.17	0.21	0.17	41.1
North: Forest Way (N)															
8	T1	All MCs	1804	2.3	1804	2.3	0.466	2.1	LOS A	7.7	55.0	0.17	0.15	0.17	46.9
9	R2	All MCs	65	0.0	65	0.0	* 0.194	63.9	LOS E	4.1	28.7	1.00	0.80	1.00	17.2
Approach			1869	2.2	1869	2.2	0.466	4.3	LOS A	7.7	55.0	0.20	0.18	0.20	37.1
West: Centre Entry (W)															
10	L2	All MCs	63	0.0	63	0.0	0.092	49.2	LOS D	1.7	11.6	0.86	0.68	0.86	16.7
Approach			63	0.0	63	0.0	0.092	49.2	LOS D	1.7	11.6	0.86	0.68	0.86	16.7
All Vehicles			3941	2.6	3941	2.6	0.500	4.1	LOS A	7.9	56.9	0.19	0.20	0.19	37.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)